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Note generali	Originally issued as the author's thesis (Ph. D.)--Royal Institute of Technology, Stockholm, 2005.
Nota di bibliografia	Includes bibliographical references (pages [363]-369) and index.
Nota di contenuto	and Basic Concepts -- and Overview -- Abstract Graphs and Set Systems -- Simplicial Topology -- Tools -- Discrete Morse Theory -- Decision Trees -- Miscellaneous Results -- Overview of Graph Complexes -- Graph Properties -- Dihedral Graph Properties -- Digraph Properties -- Main Goals and Proof Techniques -- Vertex Degree -- Matchings -- Graphs of Bounded Degree -- Cycles and Crossings -- Forests and Matroids -- Bipartite Graphs -- Directed Variants of Forests and Bipartite Graphs -- Noncrossing Graphs -- Non-Hamiltonian Graphs -- Connectivity -- Disconnected Graphs -- Not 2-connected Graphs -- Not 3-connected Graphs and Beyond -- Dihedral Variants of k-connected Graphs -- Directed Variants of Connected Graphs -- Not 2-edge-connected Graphs -- Cliques and Stable Sets -- Graphs Avoiding k-matchings -- t-colorable Graphs -- Graphs and Hypergraphs with Bounded Covering Number -- Open Problems -- Open Problems.
Sommario/riassunto	A graph complex is a finite family of graphs closed under deletion of edges. Graph complexes show up naturally in many different areas of mathematics, including commutative algebra, geometry, and knot theory. Identifying each graph with its edge set, one may view a graph

complex as a simplicial complex and hence interpret it as a geometric object. This volume examines topological properties of graph complexes, focusing on homotopy type and homology. Many of the proofs are based on Robin Forman's discrete version of Morse theory. As a byproduct, this volume also provides a loosely defined toolbox for attacking problems in topological combinatorics via discrete Morse theory. In terms of simplicity and power, arguably the most efficient tool is Forman's divide and conquer approach via decision trees; it is successfully applied to a large number of graph and digraph complexes.